KIC 009166870

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_\star$ ($R_\odot$)	$T_\star$ (K)	R_p ($R_\oplus$)	S_p ($S_\oplus$)
009166870-01	OBS	0932.01	3.855607	132.122005	997.8	3.183	74.9	79.2	0.96	5936	3.55	425.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009166870-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—EPHEM_MATCH

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.
See `http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col` for comment definitions.

Ephemeris Match Information For 009166870-01

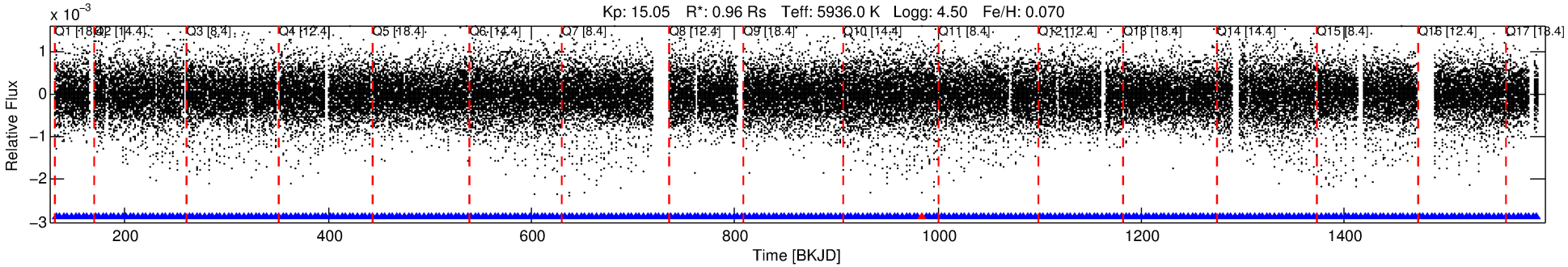
TCE (1)	KIC	Parent (2)	Parent KIC	P_1:P_2	Dist (″)	ΔRow	ΔCol	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
009166870-01	9166870	931.01	9166862	1:1	7.5	-2	1	15.27	15.05	17.51	Direct-PRF	0	0.05	0.04

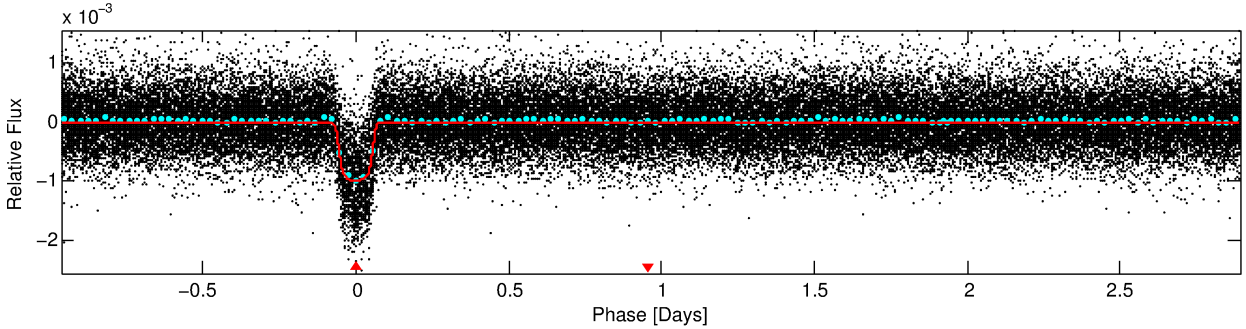
Notes: P_1:P_2 is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth dividied by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should recieve extra scrutiny, especially if the period ratio is very large.

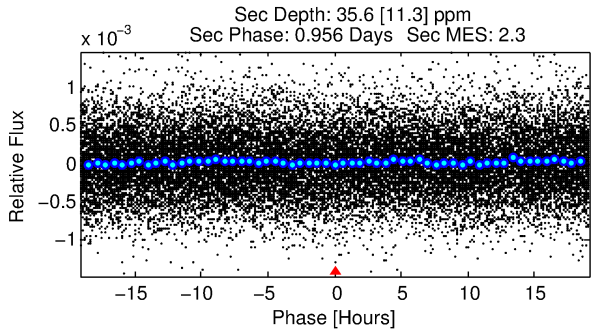
DV One-Page Summary

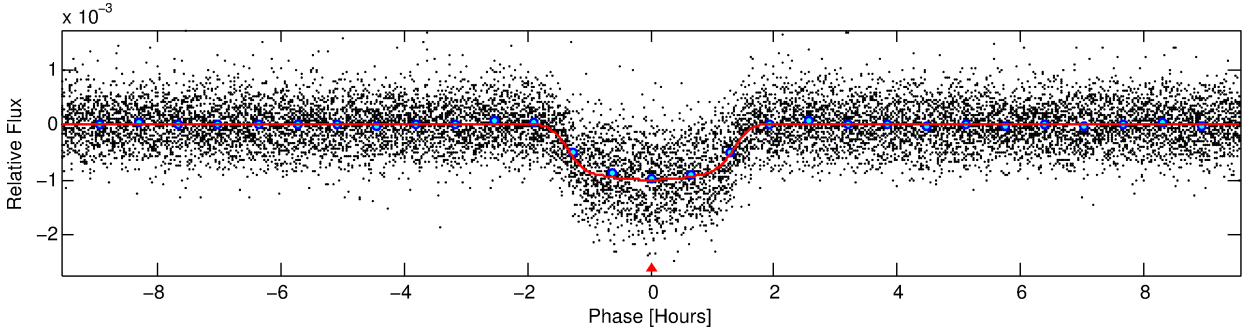
KIC: 9166870 Candidate: 1 of 1 Period: 3.856 d
KOI: K00932.01 Corr: 0.982

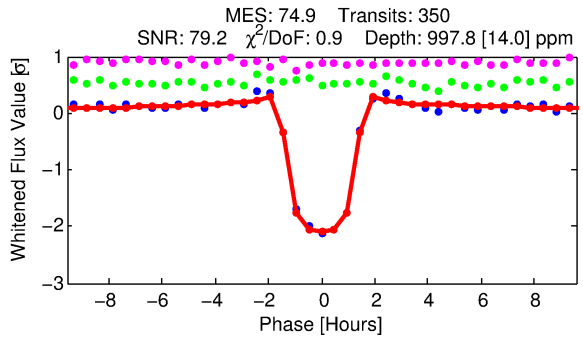
Kp: 15.05 R*: 0.96 Rs Teff: 5936.0 K Logg: 4.50 Fe/H: 0.070

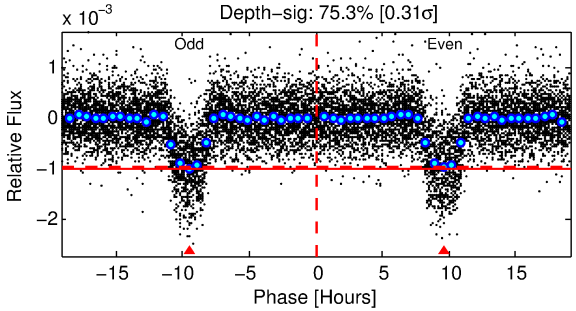


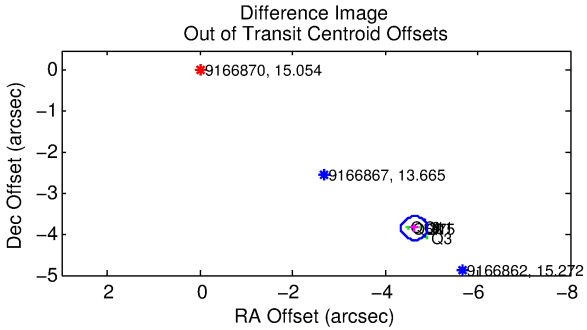












DV Fit Results:

Period = 3.85561 [0.00000] d
Epoch = 132.1220 [0.0006] BKJD
Rp/R* = 0.0337 [0.0010]
a/R* = 5.11 [0.65]
b = 0.88 [0.03]

Seff = 425.69 [161.48]
Teq = 1158 [110] K
Rp = 3.55 [0.99] Re
a = 0.0493 [0.0118] AU

Ag = 3.78 [1.81] [1.54σ]
Teffp = 2497 [219] K [5.46σ]

DV Diagnostic Results:

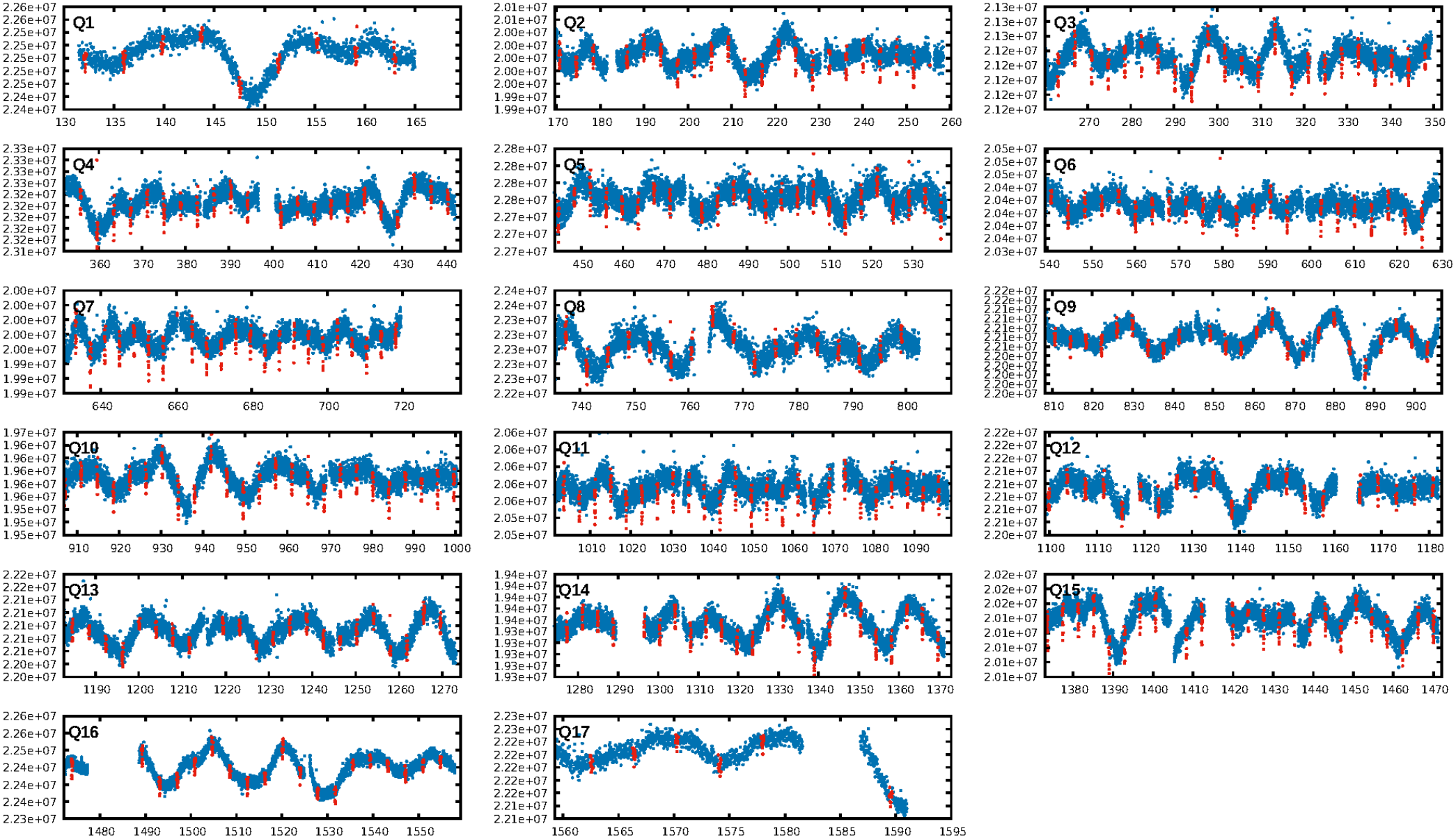
ShortPeriod−sig: N/A
LongPeriod−sig: N/A
ModelChiSquare2−sig: N/A
ModelChiSquareGof−sig: N/A
Bootstrap−pfa: 0.00e+00
RollingBand−fgt: 1.00 [334/335]
GhostDiagnostic−chr: −0.2595

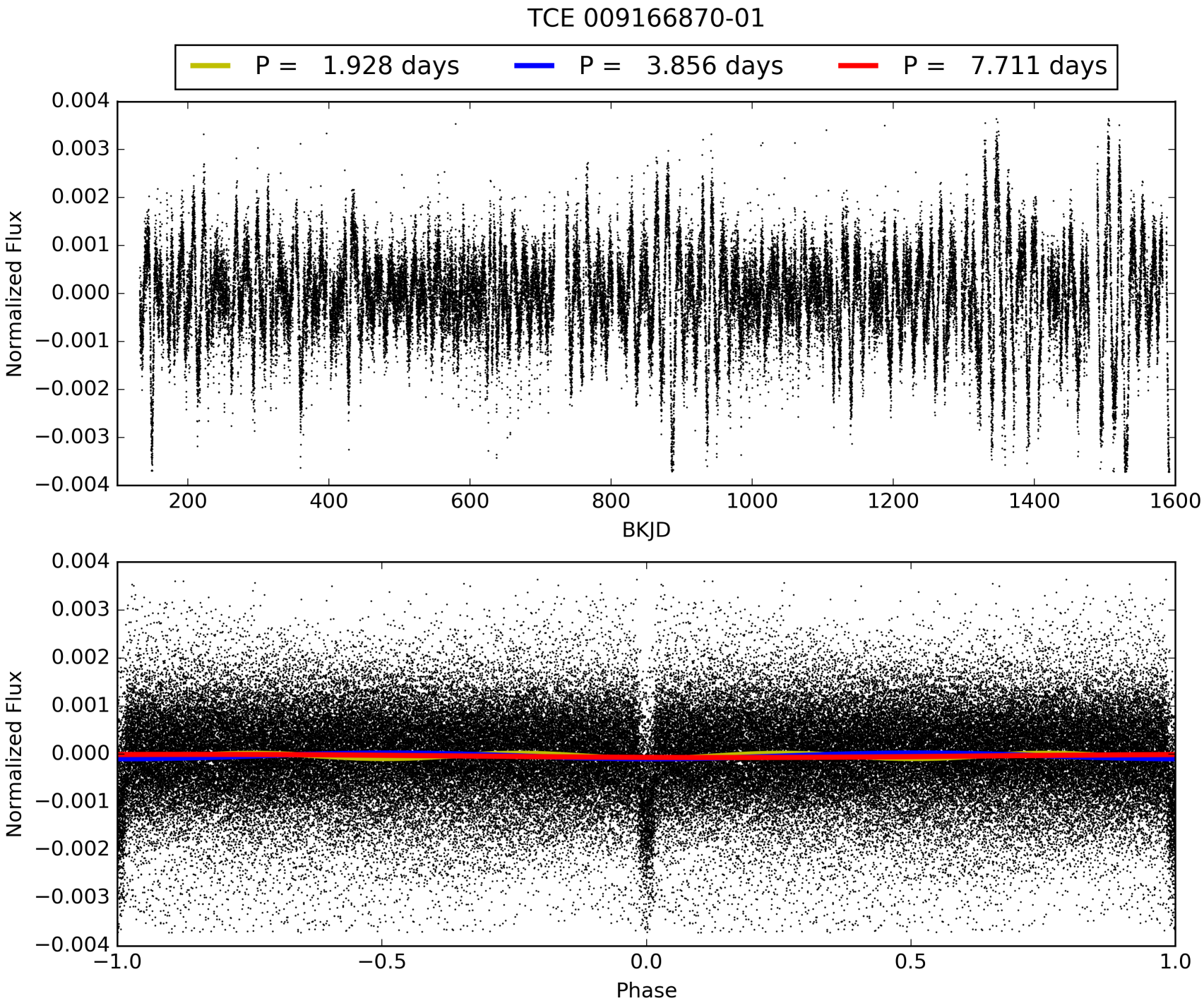
Centroid−sig: 0.0%
Centroid−so: 27.462 arcsec [256.15σ]
OotOffset−rm: 6.021 arcsec [62.87σ]
KicOffset−rm: 7.340 arcsec [61.19σ]
OotOffset−st: 3/4/0/0 [7]
KicOffset−st: 3/4/0/0 [7]
DiffImageQuality−fgm: 1.00 [7/7]
DiffImageOverlap−fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31−Jan−2016 03:50:39 Z

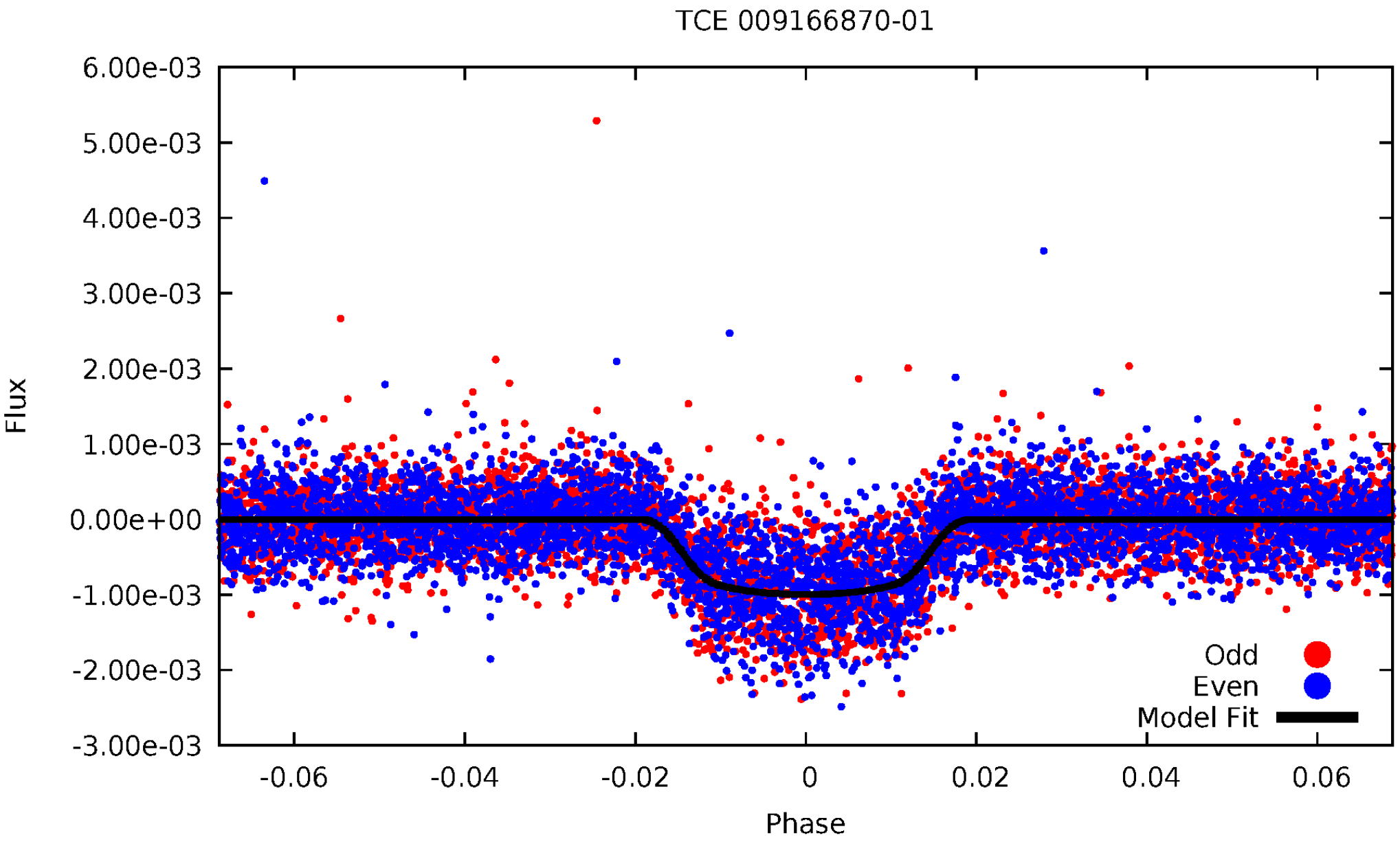
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009166870-01, PDC Light Curves

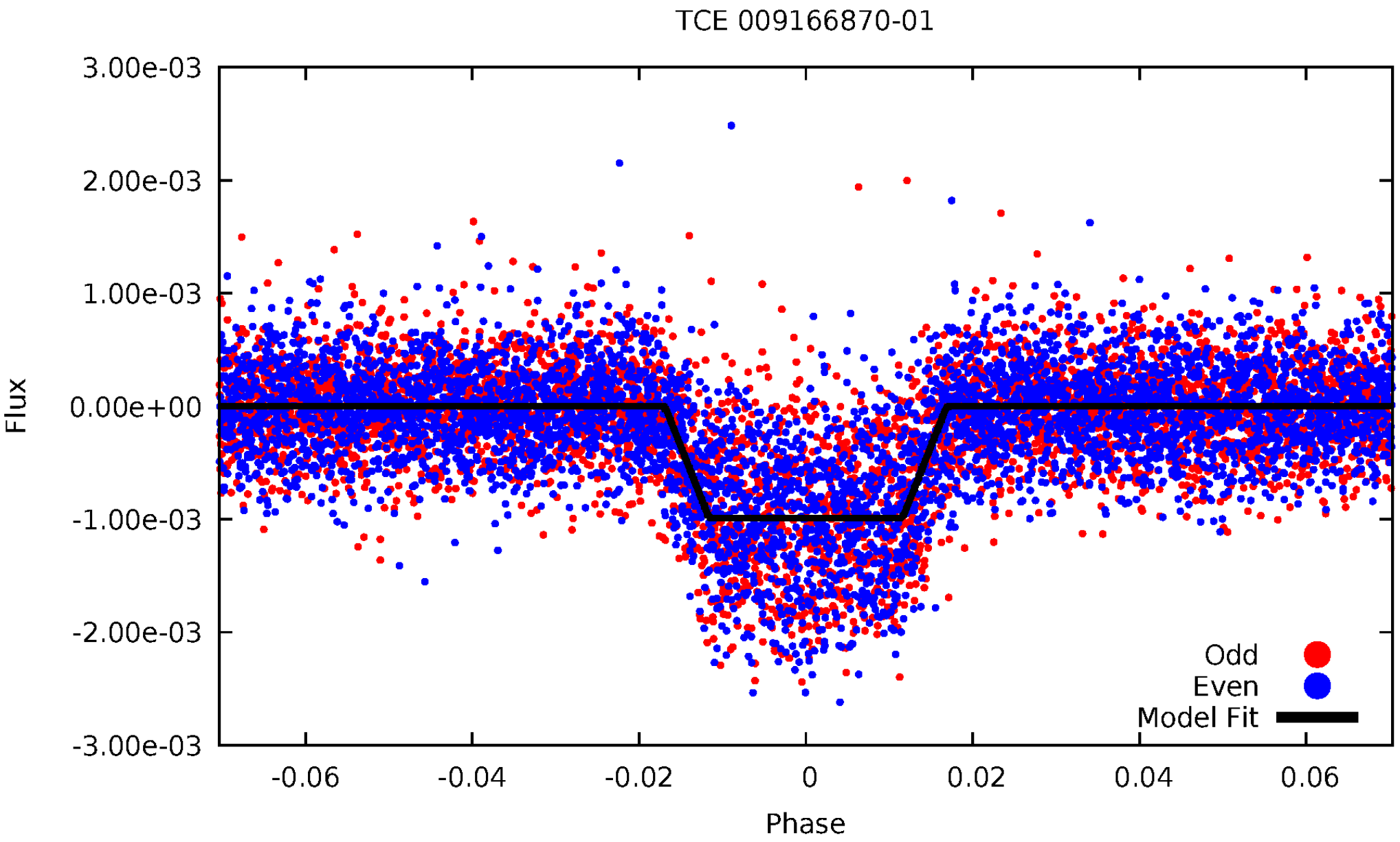



TCE 009166870-01
P = 1.928 days
P = 3.856 days
P = 7.711 days
Normalized Flux
BKJD
Phase

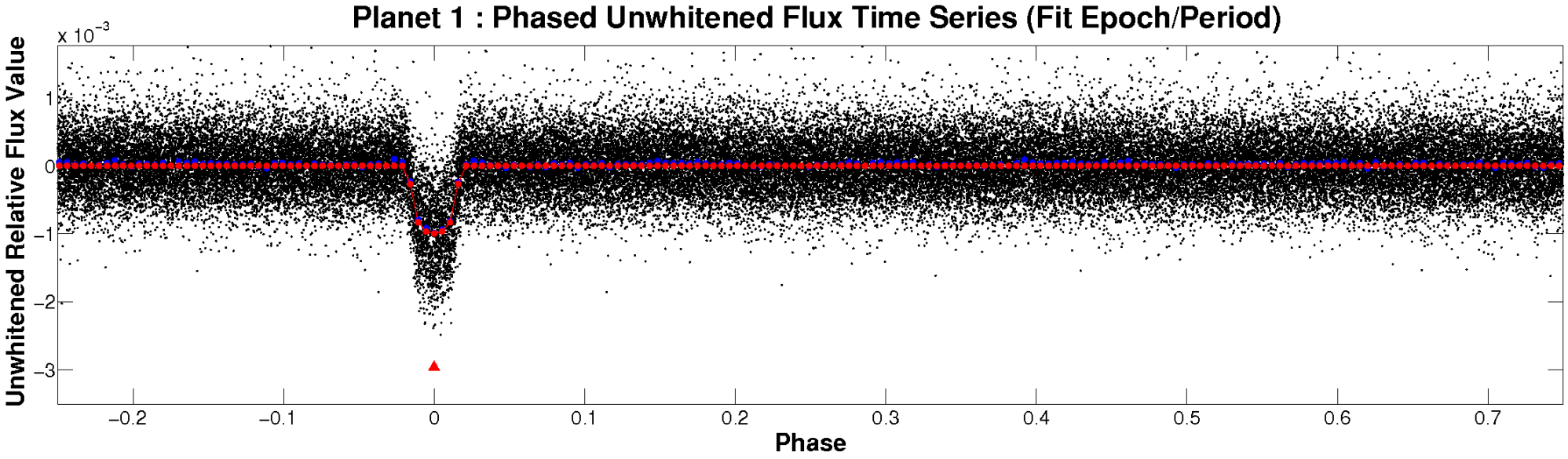
DV Odd/Even

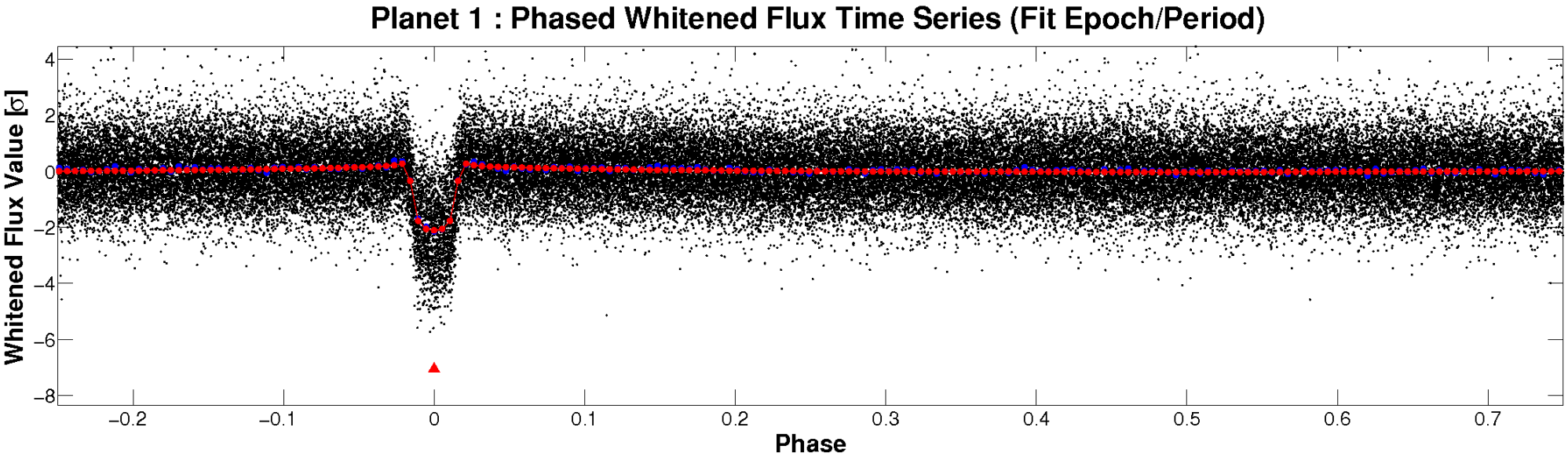

TCE 009166870-01
6.00e-03
5.00e-03
4.00e-03
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
-3.00e-03
Flux
-0.06
-0.04
-0.02
0
0.02
0.04
0.06
Phase
Odd
Even
Model Fit

ALT Odd/Even


TCE 009166870-01
3.00e-03
2.00e-03
1.00e-03
0.00e+00
-1.00e-03
-2.00e-03
-3.00e-03
Flux
-0.06
-0.04
-0.02
0
0.02
0.04
0.06
Phase
Odd
Even
Model Fit

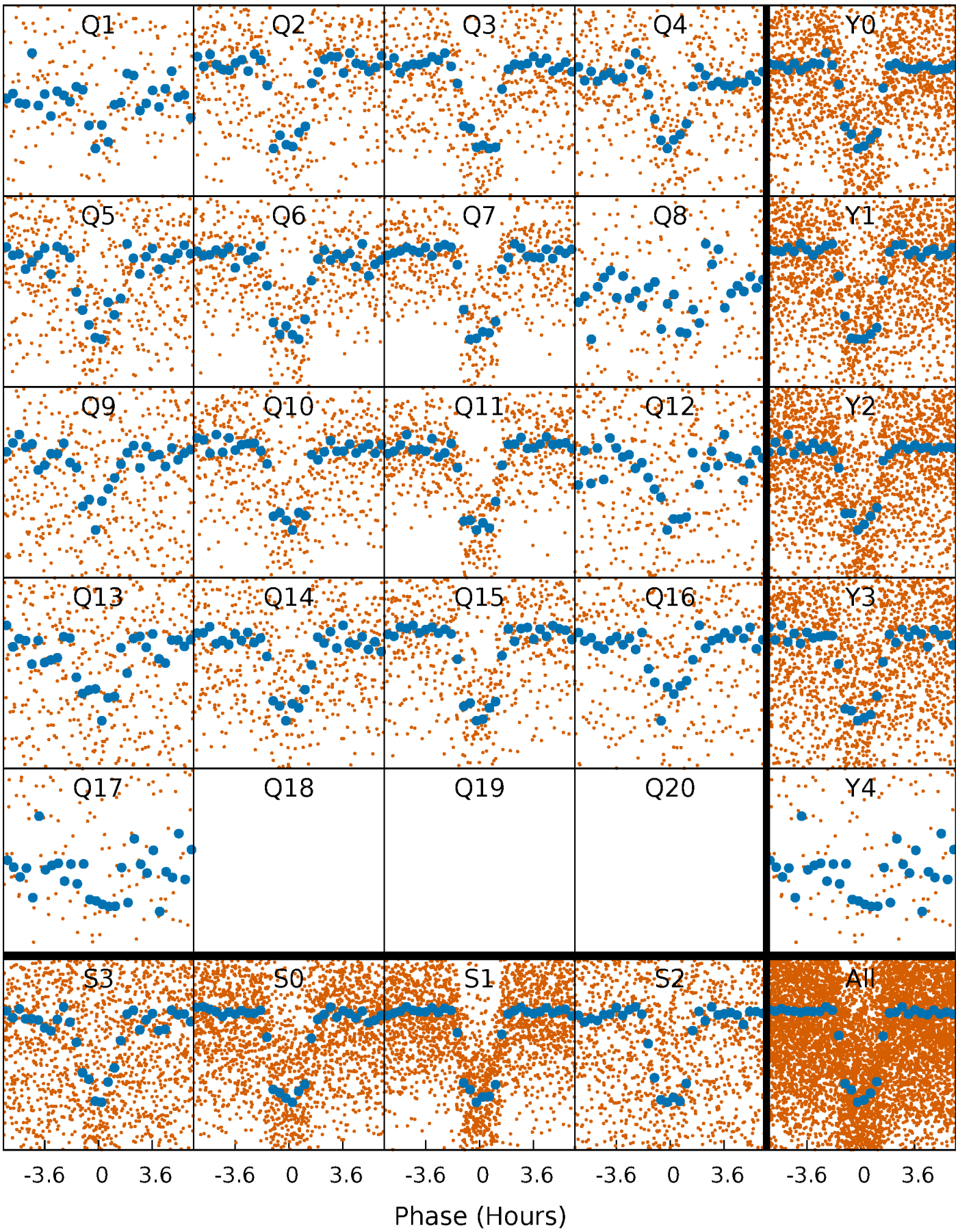
Non-Whitened Vs. Whitened Light Curve





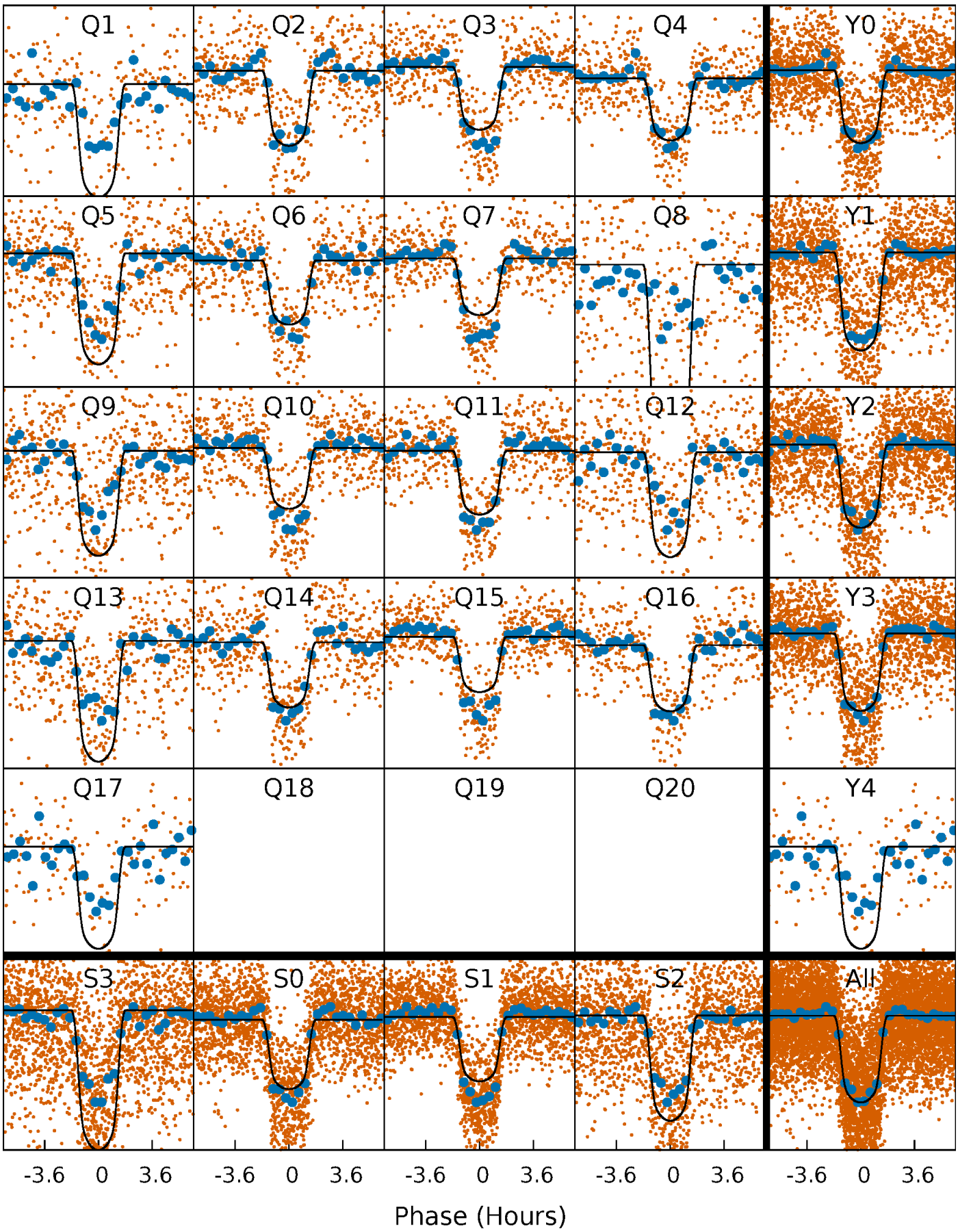
PDC Quarter-Phased Transit Curves

TCE 009166870-01 P= 3.855607 Days T_0=132.122005 (BKJD)



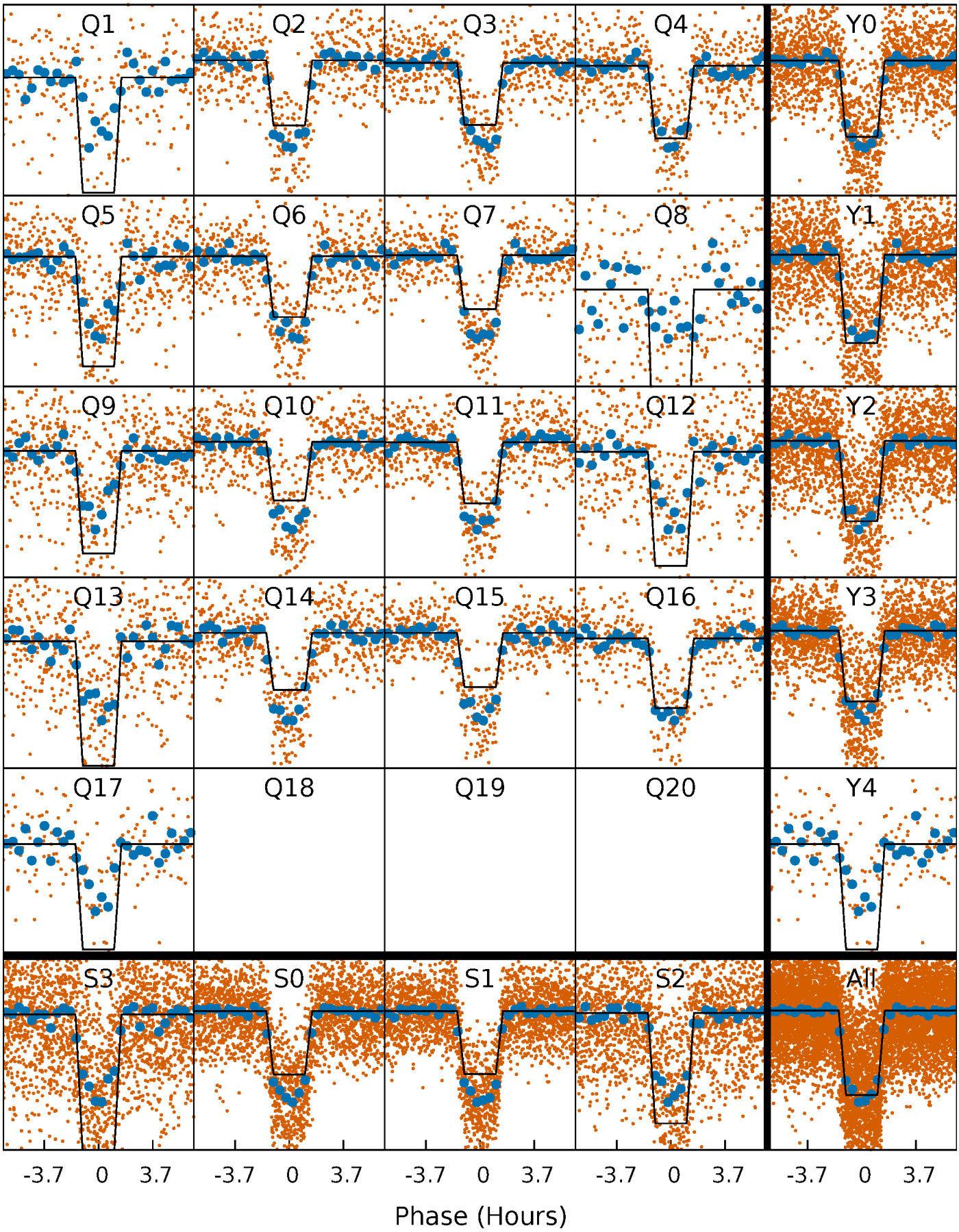
DV Quarter-Phased Transit Curves

TCE 009166870-01 P= 3.855607 Days T_0=132.122005 (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

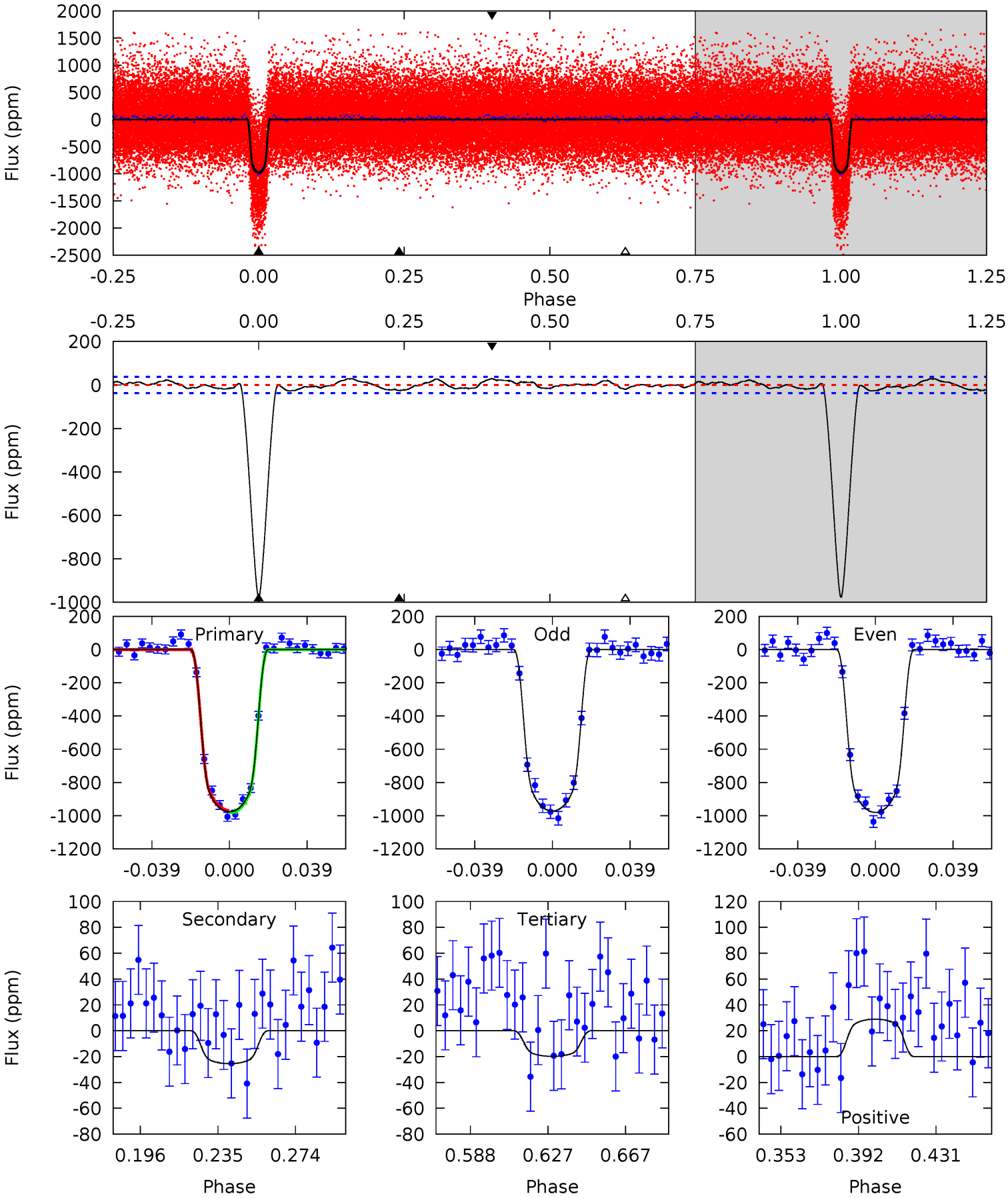
TCE 009166870-01 P= 3.855613 Days T_0=132.120968 (BKJD)



DV Model-Shift Uniqueness Test

009166870-01, P = 3.855607 Days, E = 128.266398 Days

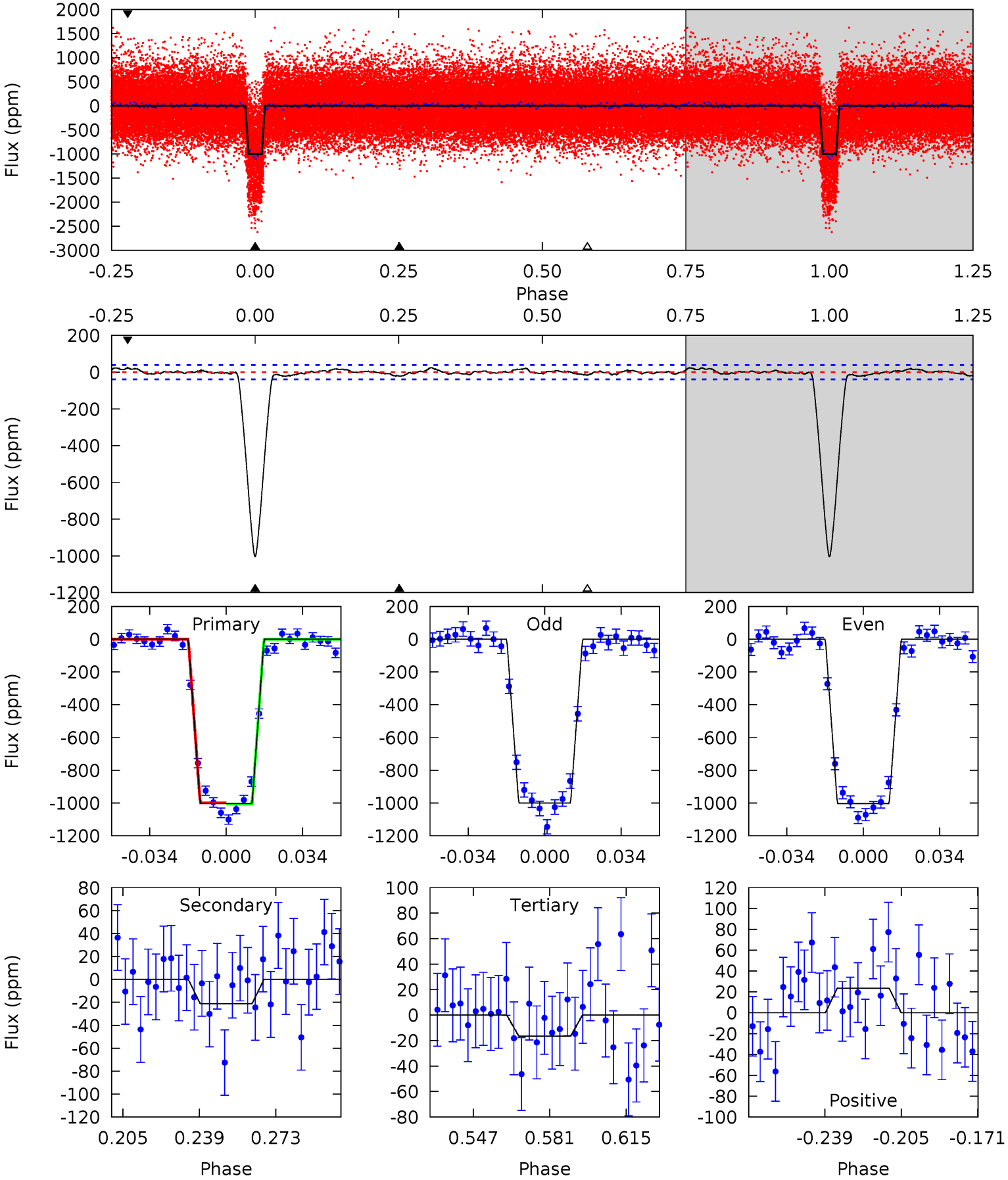
Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
124.7	3.25	2.53	3.70	4.76	2.06	1.69	122.2	121.0	0.72	-0.45	0.55	1.00	0.03	0.85



Alt Model-Shift Uniqueness Test

009166870-01, P = 3.855613 Days, E = 128.265355 Days

Pri	Sec	Ter	Pos	FA_1	FA_2	F_{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
123.1	2.59	2.01	2.89	4.79	2.12	1.13	121.1	120.2	0.58	-0.30	0.21	0.96	0.02	0.37



Stellar Parameters For KIC 009166870

	$T_{\rm eff}(K)$	$\log(g)$	[Fe/H]	R ($R_\odot$)	$M(M_\odot)$	$p_\star$ (g·cm^{-3})
	5936^{+164}_{-205}	$4.501^{+0.046}_{-0.196}$	$0.070^{+0.250}_{-0.300}$	$0.965^{+0.268}_{-0.089}$	$1.075^{+0.115}_{-0.140}$	$1.685^{+0.392}_{-0.780}$
	+3%/-3%	+1%/-4%	+357%/-429%	+28%/-9%	+11%/-13%	+23%/-46%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009166870-01 / KOI 0932.01

Detrend	Depth (ppm)	R_p ($R_\oplus$)	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-25±8	$3.66^{+0.54}_{-0.33}$	1654^{+110}_{-78}	2917^{+148}_{-166}	$2.433^{+0.893}_{-0.852}$
Alt.	-21±8	$3.40^{+0.49}_{-0.28}$	1651^{+108}_{-78}	2890^{+158}_{-208}	$2.281^{+1.025}_{-0.917}$

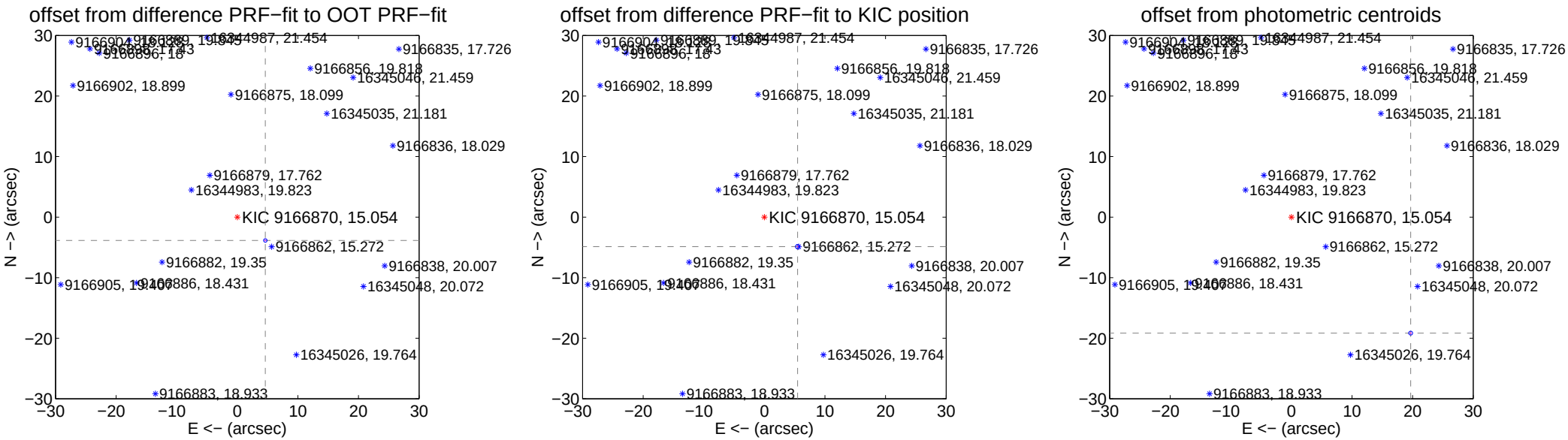
T_{max} = Theoretical Maximum Planetary Temperature
T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

DV Centroid Data

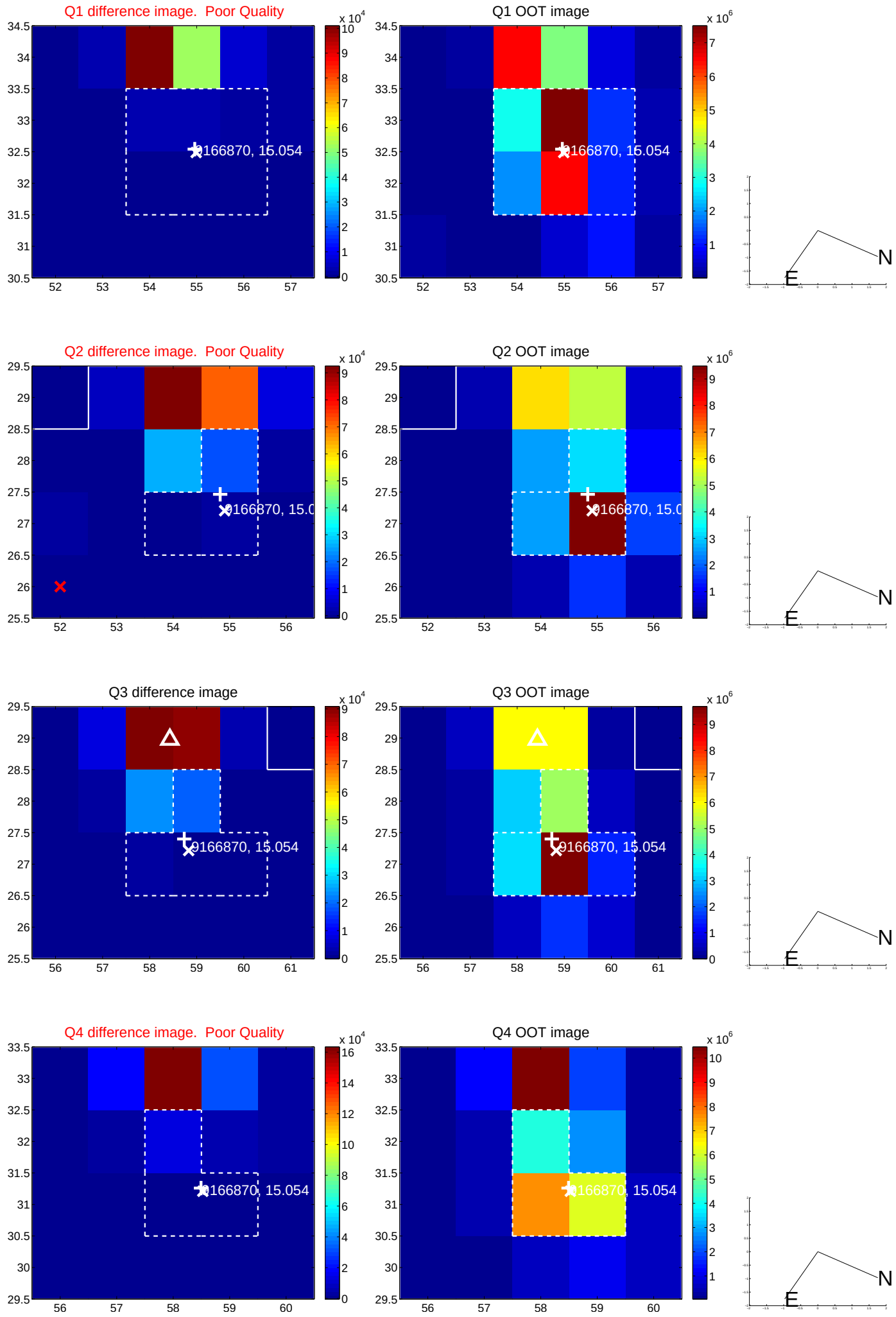
Supplemental centroid analysis for 009166870-01. Kepler magnitude: 15.05. Transit SNR 79.18
There are 7 quarters with good PRF difference image offsets
The direct PRF centroid is offset from the target star catalog position by about 0.96 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.021 ± 0.096	62.87	-4.627 ± 0.094	-3.853 ± 0.076
PRF-fit source offset from KIC position	7.340 ± 0.120	61.19	-5.486 ± 0.112	-4.876 ± 0.083
photometric centroid source offset	27.46 ± 0.11	256.15	-19.68 ± 0.11	-19.15 ± 0.11

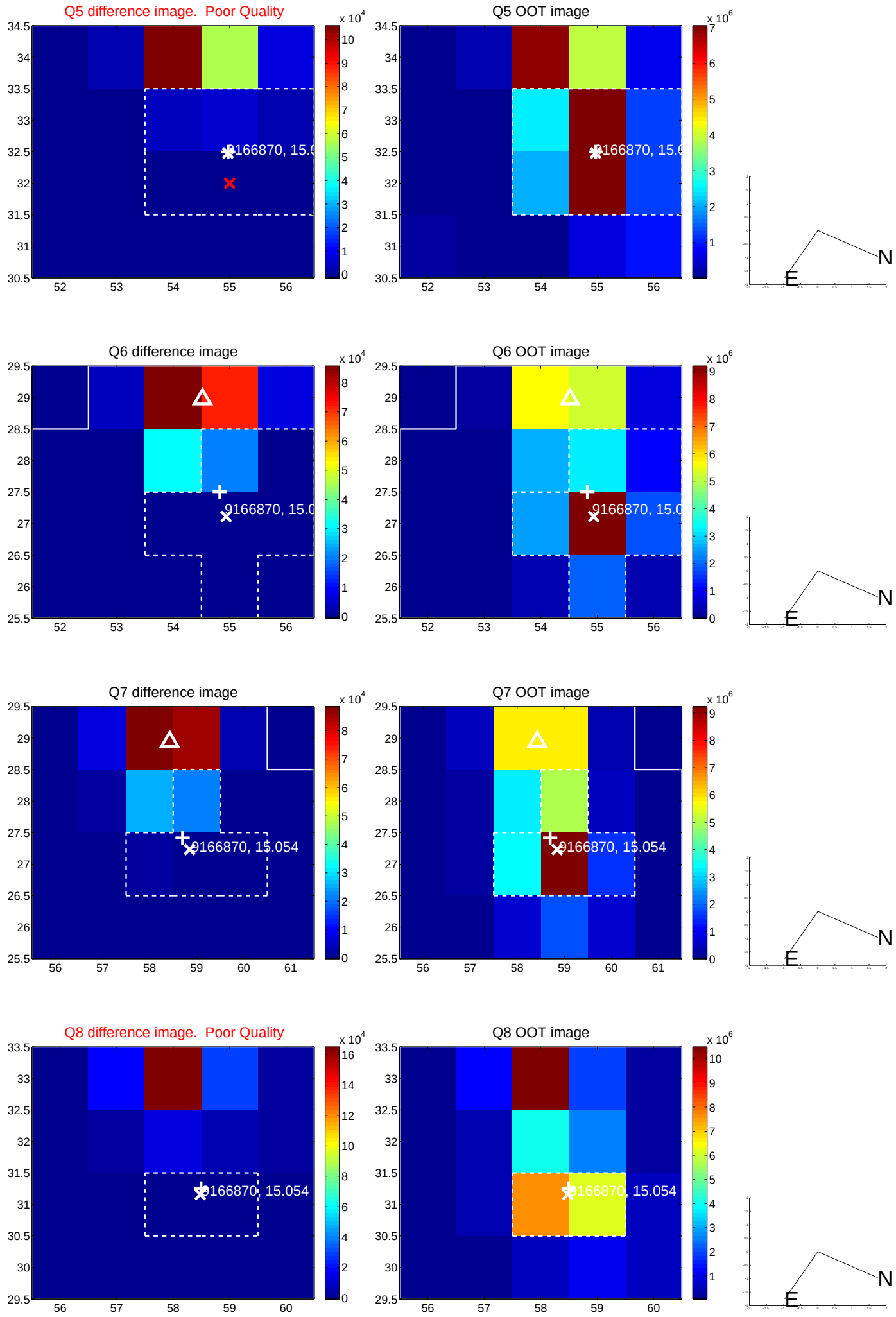


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one-σ uncertainty. Blue circle: three-σ. Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs $> 15,000,000$ are from the UKIRT catalog.

white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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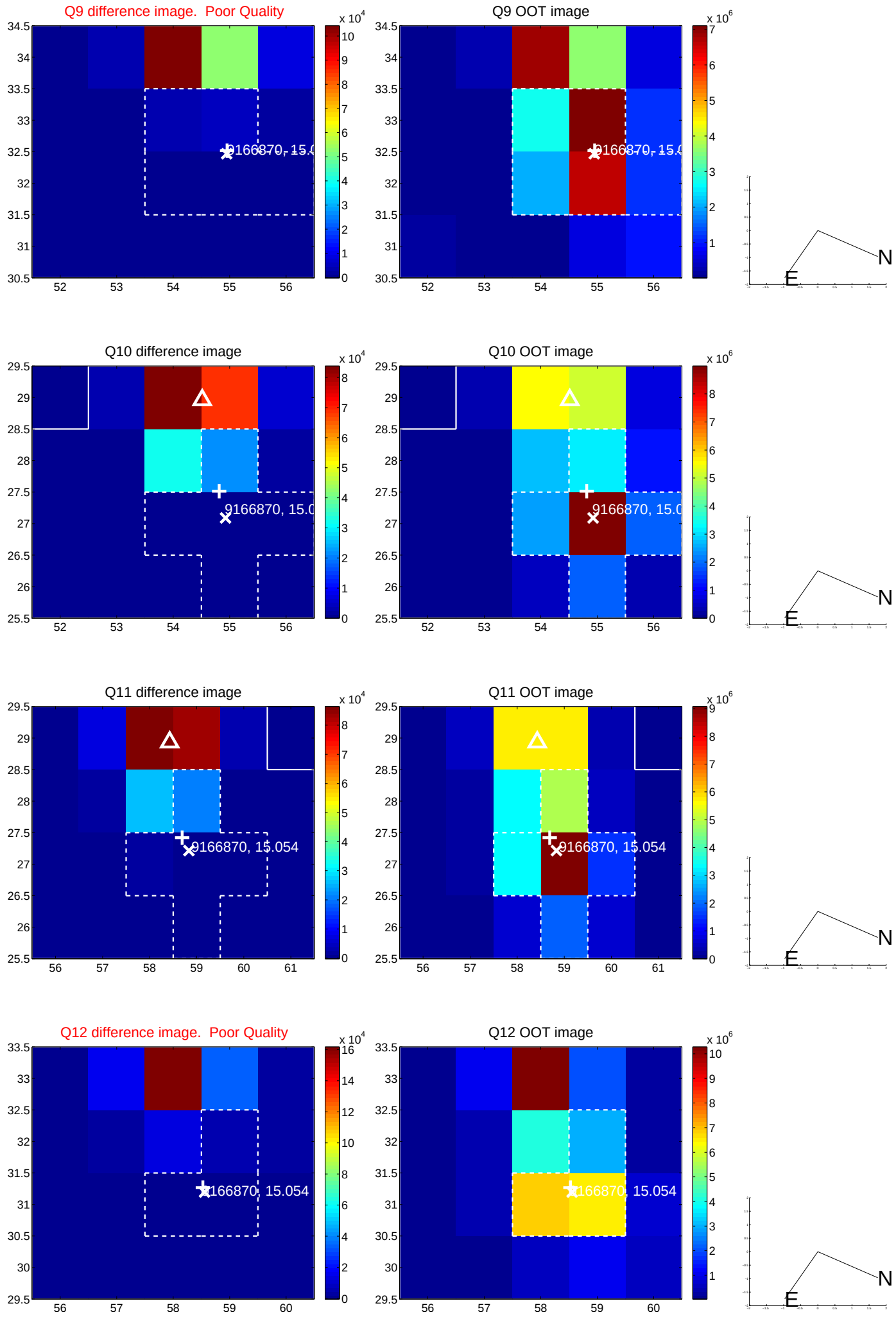
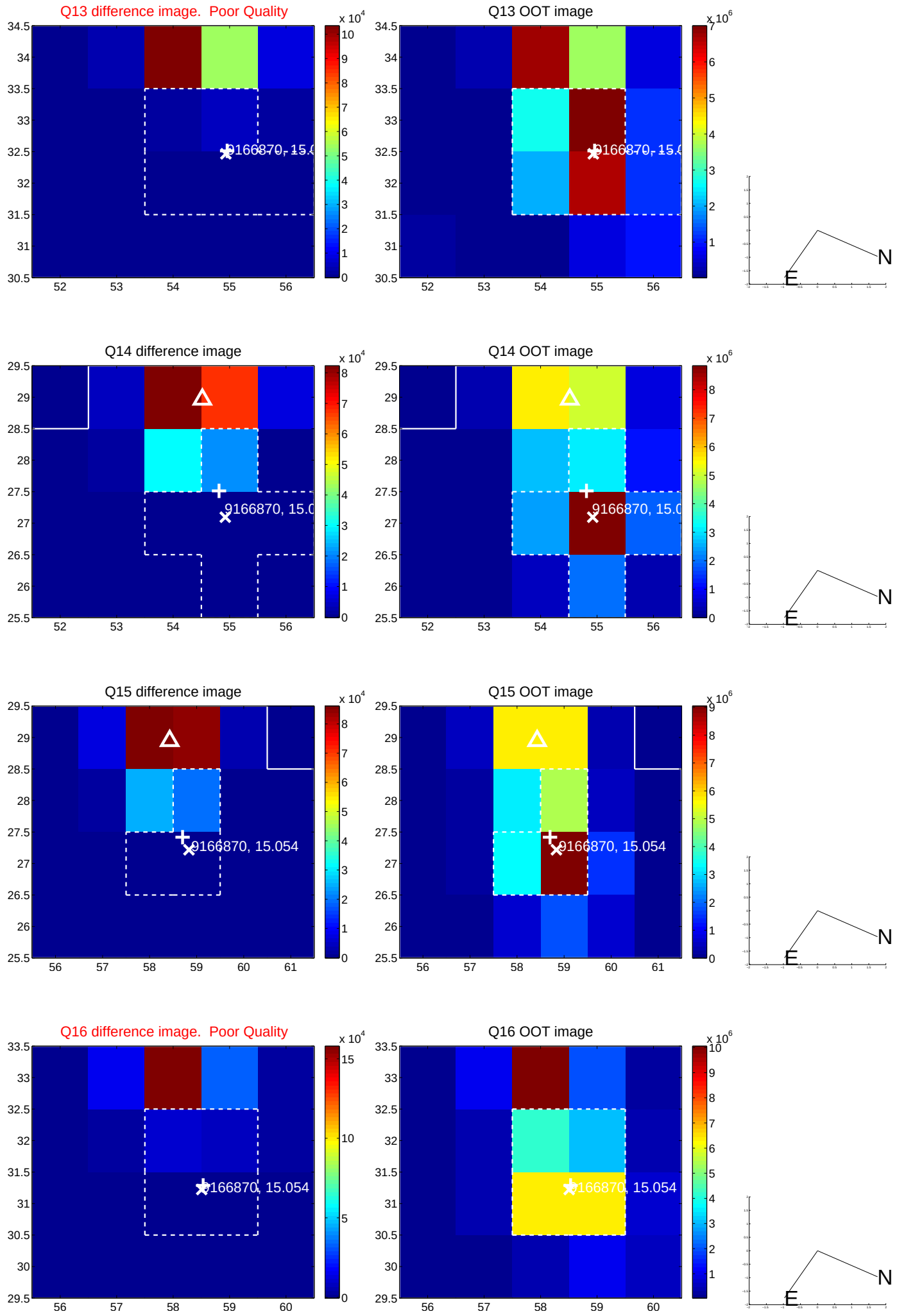
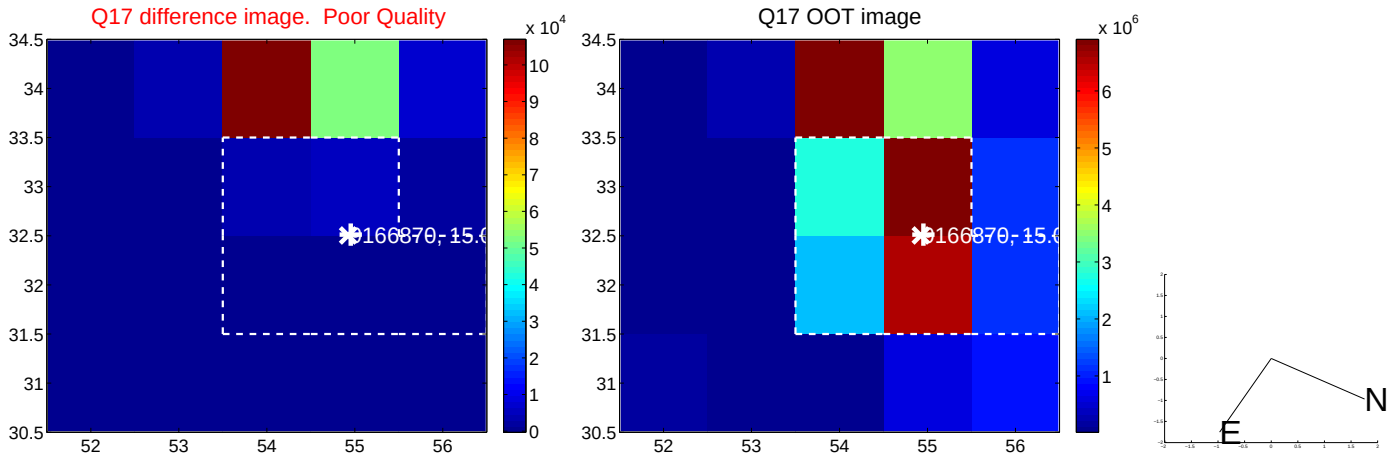
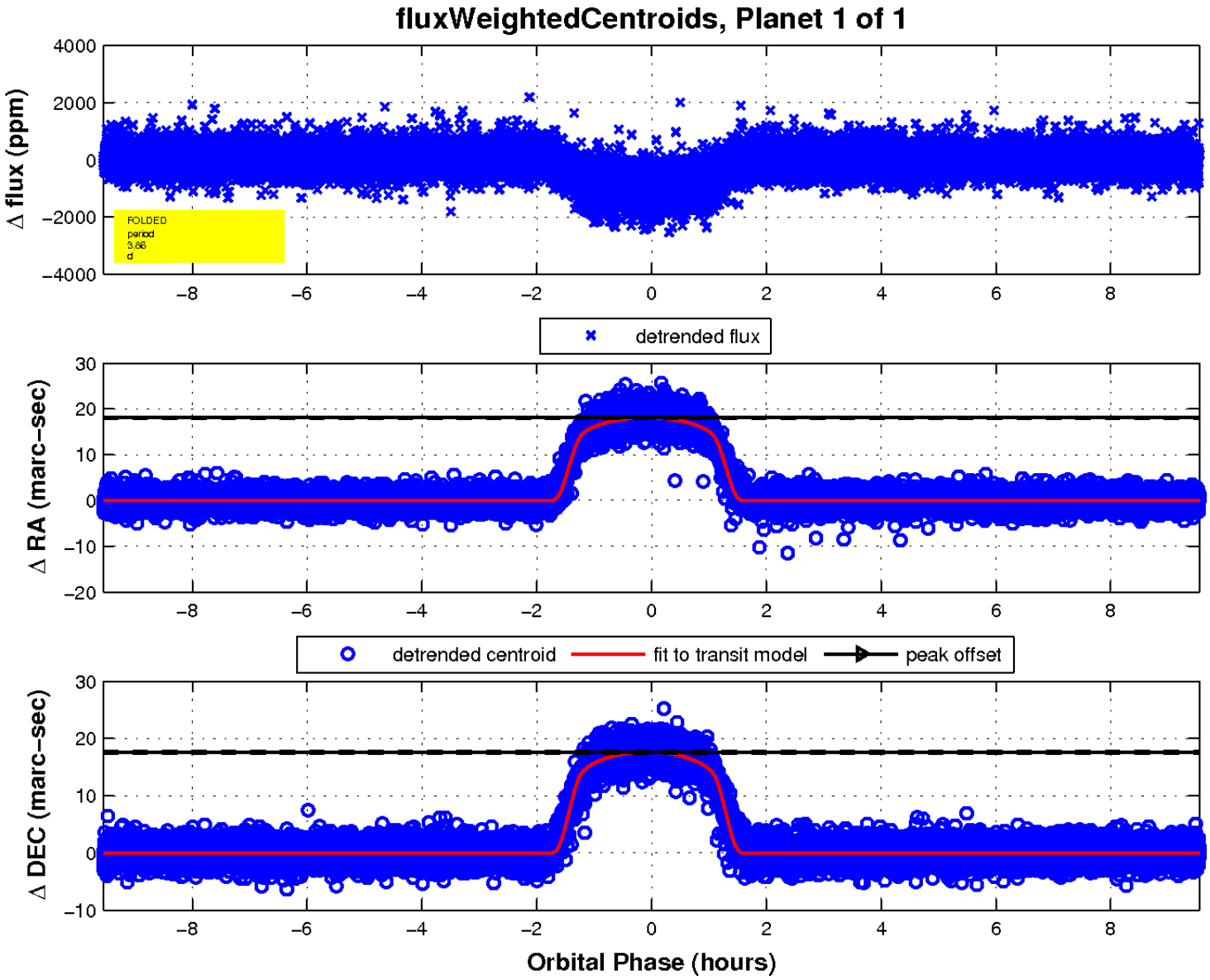
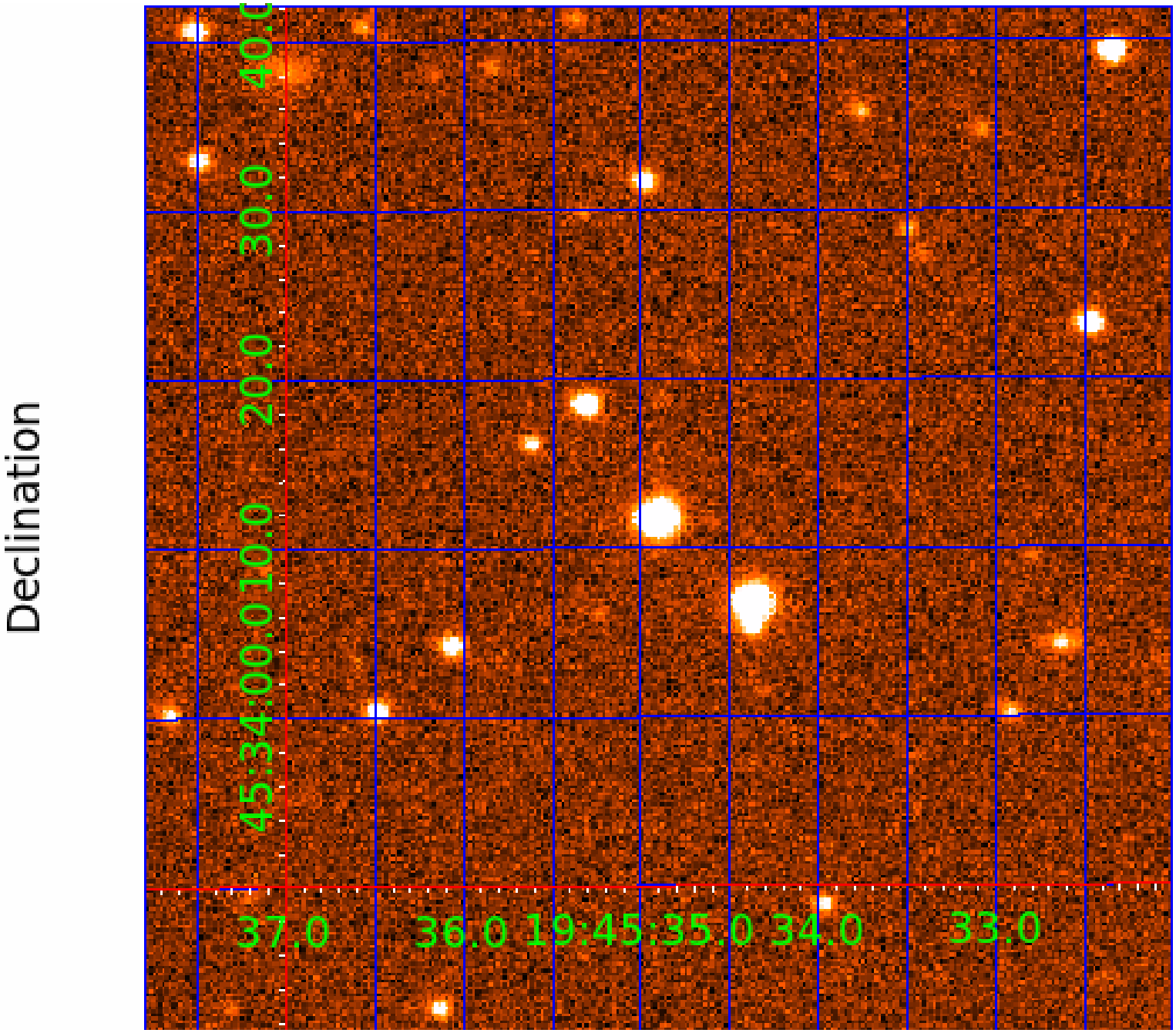


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





UKIRT Image